CHAPTER 32

GEOMETRIC DESIGN FOR COLLECTOR AND LOCAL STREETS

32.1 Introduction

The District of Columbia Collector Street System provides access between the arterial street network and the local streets within an established grid system. The collector streets are located in predominately high-density residential neighborhoods, but are consistent with the principles of the functional classifications. The streets are tree lined with established cross section distributions for sidewalks and the tree spaces. The following design guidelines will maintain consistency on the existing streets and provide the best possible geometrics for new development.

32.2 General Design Considerations

The design guidelines need to address the existing street system with the cross section and neighborhood environment restraints to reconstruction widenings and other improvements. New developments and the proposed street systems must be addressed to provide the best possible geometric designs.

32.3 Geometric Design

32.3.1 Design Traffic Volumes

- Existing Street - The DHV shall be the future estimated volume 20-years from the construction completion date.
- Proposed Street - **AASHTO, Chapter VI.**

32.3.2 Design Speed

- Existing Street - The minimum Design Speed shall be the posted speed limit. If the speed limit is not posted, then the minimum design speed shall be 25 MPH. The street grid system and the close spacing of traffic control devices influence normal vehicular speeds. Sections of the roadway, in which the design speed may not be attained, such as around curves or through hazardous locations, may be posted with appropriate warning signs and speed plates to indicate the maximum recommended speed in accordance with the **MUTCD**, Section 2C-35.
- Proposed Street - **AASHTO, Chapter VI**. Modify first paragraph to read as shown above.

32.3.3 Sight Distance

- Existing Street - The stopping sight distance shall be a minimum of 150 ft. that corresponds to a design speed of 25 MPH. The minimum stopping distance will be correlated to the design speed of the roadway facility in accordance with **AASHTO**. Requirements for passing sight distance are not applicable.
- Proposed Street - Same as above.

32.3.4 Grades

- Existing Street - Grades shall be as level as practical for existing conditions and surrounding land use. A .35 percent grade minimum is required and shall be improved if possible.
- Proposed Street - The minimum grade shall be .50 percent and the maximum grade shall be 8 percent.

32.3.5 Alignment

- Existing Street - Alignment has been set. Minor adjustments to the alignment may be made providing there is no adverse impact on adjacent properties.
- Proposed Street - **AASHTO, Chapter VI**.

32.3.6 Pavement Cross-slope

- Existing Street - Normal cross-slopes in the traveled way range from 1 percent minimum to a maximum of 4 percent. Exclusive parking lanes shall have a maximum slope of 5 percent.
- Proposed Street - **AASHTO, Chapter VI**. Exclusive parking lanes shall have a maximum slope of 5 percent. Special consideration may warrant a maximum cross-slope of 4 percent in the travel way.

32.3.7 Superelevation

- Existing Street – **AASHTO, Chapter VI** - Modify the second sentence to read: " collector streets shall be a maximum of 0.0475 ft./ft."
- Proposed Street - **AASHTO, Chapter VI**

32.3.8 Number of Lanes

- Existing Street - No change in the number of lanes.
- Proposed Street – **AASHTO, Chapter VI**.

32.3.9 Width of Roadway

- Existing Street - Where the roadway width is 30 ft. with parking on both sides of the street, the minimum lane width for two-way traffic shall be 16 ft. With parking restricted on one side, the travel lane width should be 11 ft. including the gutter pan. For roadways that are less than 30 ft. wide, the minimum width is 10 ft. and parking will be restricted on one side.

- Proposed Street - The minimum width of the roadway shall be 34 ft. including the gutter pan. The minimum lane width shall be 10 ft. excluding the gutter pan.

32.3.10 Parking Lanes

- Existing Street - The minimum width is 7 ft.
- Proposed Street – **AASHTO, Chapter VI.**

32.3.11 Medians

- Existing Street - Medians shall be constructed when there are more than 4 lanes of traffic.
- Proposed Street – **AASHTO, Chapter VI.**

32.3.12 Curbs

- Existing Street - The normal curb reveal shall be 7 in. Curbs may be a minimum of 6 in. to match the existing adjacent curbs. In areas around trees with large root systems, the 8-inch width of the granite or concrete curb may be reduced to 6-inches to reduce the adverse effect of root pruning.
- Proposed Street – **AASHTO, Chapter VI** - Modify the second sentence in the first paragraph to read: "...right of traffic should be 7 in. high,…".

32.3.13 Drainage

- Existing Street - The design criteria are a 15-year storm, 5- minute duration, and a maximum spread of 6 ft. (from face of curb).
- Proposed Street - **AASHTO, Chapter VI.**

32.3.14 Sidewalks

- Existing Street - Sidewalks to be reconstructed, if required, with a minimum cross-slope of 1 percent and a maximum cross-slope slope

of 2 percent and meet requirements of **Americans with Disabilities Act Accessibility Guidelines (ADAAG).**
- Proposed Street – **AASHTO, Chapter VI, ADAAG** requirements.

32.3.15 Driveways

- Existing Street – **AASHTO, Chapter VI.** No new driveway entrances to be constructed closer than 60 ft. from the intersection.
- Proposed Street – **AASHTO, Chapter VI**. No new driveway entrances to be constructed closer than 60 ft. from the intersection.

32.3.16 Curb-Cut Ramps

- Existing Street – **AASHTO, Chapter VI and ADAAG** requirements except that side flares shall be a minimum 21 in. in length at the curb line when all other requirements are met. When requirements cannot be met, the ramps may be built in the corner radius.
- Proposed Street – **AASHTO, Chapter VI and ADAAG** requirements.

32.3.17 Roadway Widths for Bridges

- Existing Street – **AASHTO, Chapter VI.**
- Proposed Street – **AASHTO, Chapter VI**.

32.3.18 Vertical Clearance

- Existing Street - The minimum vertical clearance will be what the existing clearance measures with a goal of attaining 14 ft.
- Proposed Street – **AASHTO, Chapter VI.**

32.3.19 Horizontal Clearance to Obstructions

- Existing Street – **AASHTO, Chapter VI**. Every effort shall be made to save existing healthy trees where clearance is less than that prescribed.
- Proposed Street – **AASHTO, Chapter VI**.

32.3.20 ROW Width

- Existing Street – The ROW width and distribution is set.
- Proposed Street – **AASHTO, Chapter VI**. Change the second sentence to read: “The minimum width of ROW for a two-lane urban

collector street shall be 55 ft. with a 10 ft. building restriction line on each side of the roadway".

32.3.21 Provisions for Utilities

- Existing Street – **AASHTO, Chapter VI.**
- Proposed Street – **AASHTO, Chapter VI.**

32.3.22 Border Areas

- Existing Street – **AASHTO, Chapter VI**. Slope in tree space shall not exceed 5.50 percent.
- Proposed Street – **AASHTO, Chapter VI.** Slope in tree space shall not exceed 5.50 percent.

32.3.23 Intersection Design

- Existing Street – **AASHTO, Chapter VI**, except that breakaway features are used only for fire hydrants.
- Proposed Street – **AASHTO, Chapter VI**, except that breakaway features are used only for fire hydrants.

32.3.24 Railroad – Street Grade Crossing

- Existing Street – **AASHTO, Chapter VI and MUTCD** except that gates may not be required for all approaches.
- Proposed Street – **AASHTO, Chapter VI and MUTCD** except that gates may not be required for all approaches.

32.3.25 Street and Roadway Lighting

- Existing Street – **AASHTO, Chapter VI**.
- Proposed Street – **AASHTO, Chapter VI**.

32.3.26 Traffic Control Devices

- Existing Street - **AASHTO, Chapter VI**.
- Proposed Street – **AASHTO, Chapter VI**.

32.3.27 Erosion Control

- Existing Street – **AASHTO, Chapter VI**. The Department of Consumer and Regulatory Affairs (DCRA) will issue final construction permits. To be issued a permit for reconstruction, the plans must contain the notes, details and data required by the D.C.

Department of Health/EnvironmentalHealth Administration/Watershed Protection Division which is part of (DCRA). Also, water quality manholes and catch basins will be constructed to replace existing structures and reduce pollution and these structures will require the approval from DCRA.

- Proposed Street – **AASHTO, Chapter VI**. Same as above.

32.3.28 Landscaping

- Existing Street – **AASHTO, Chapter VI**. Landscaping, which includes standards for sidewalk treatment, trees and street furniture, in downtown areas shall meet the requirements of the District's current *Downtown Streetscape Regulations*
- Proposed Street – **AASHTO, Chapter VI**. Same as above

32.4 Other Geometric Design Considerations

32.4.1 Sag Vertical Curves

- Existing Street – **AASHTO, Chapter VI**. Where street lighting is present the design criteria for headlight sight distance are not applicable.
- Proposed Street – **AASHTO, Chapter VI**. Where street lighting is present the design criteria for headlight sight distance are not applicable.

32.4.2 Crest Vertical Curves

- Existing Street – **AASHTO, Chapter VI. Also, see Sub-section III-C: Sight Distance**.
- Proposed Street – **AASHTO, Chapter VI. Also, see Sub-section III-C: Sight Distance**.